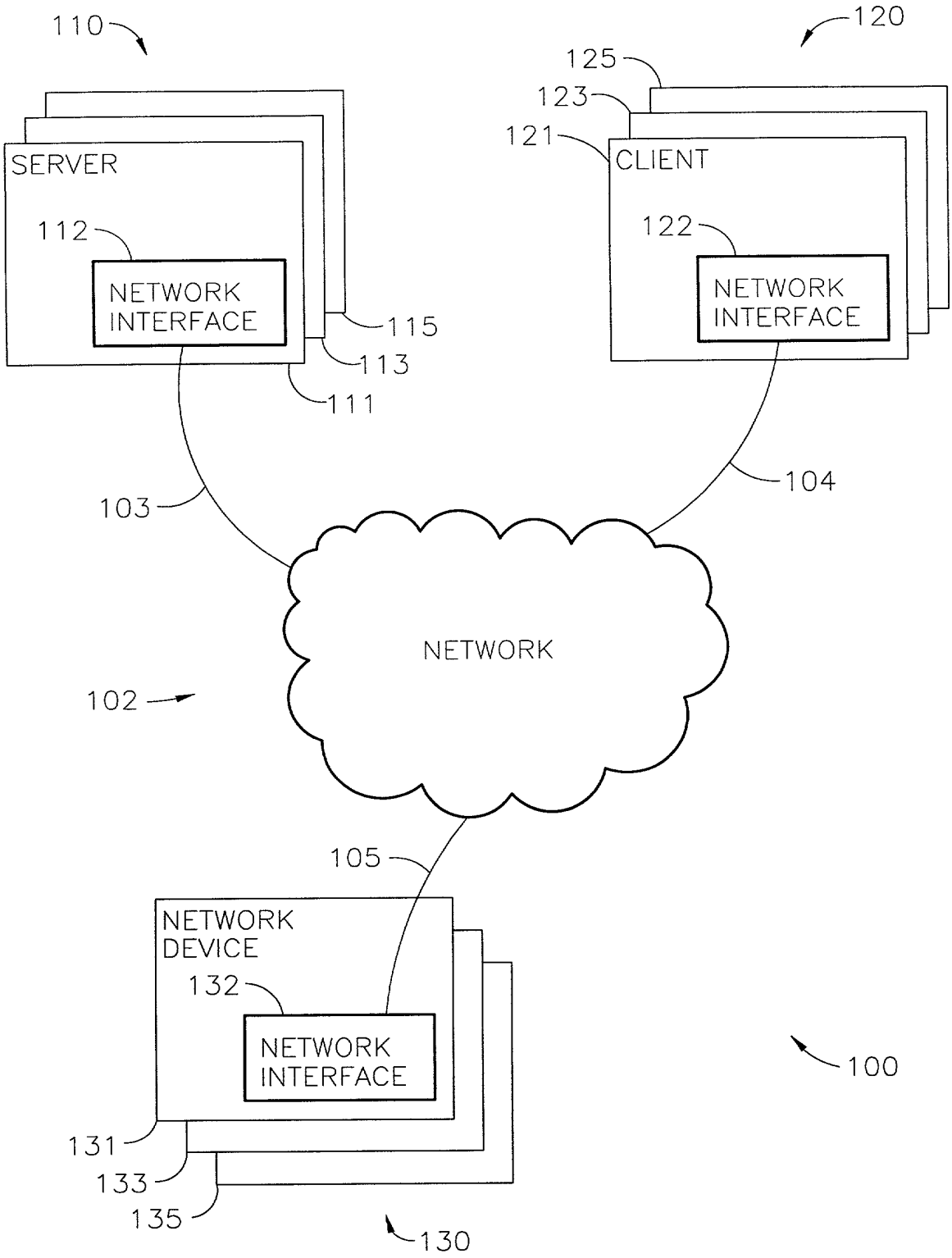

110
120
125
123
121
SERVER
CLIENT
112
122
NETWORK INTERFACE
NETWORK INTERFACE
115
113
111
103
104
NETWORK
102
105
NETWORK DEVICE
132
NETWORK INTERFACE
100
131
133
135
130

FIG. 1

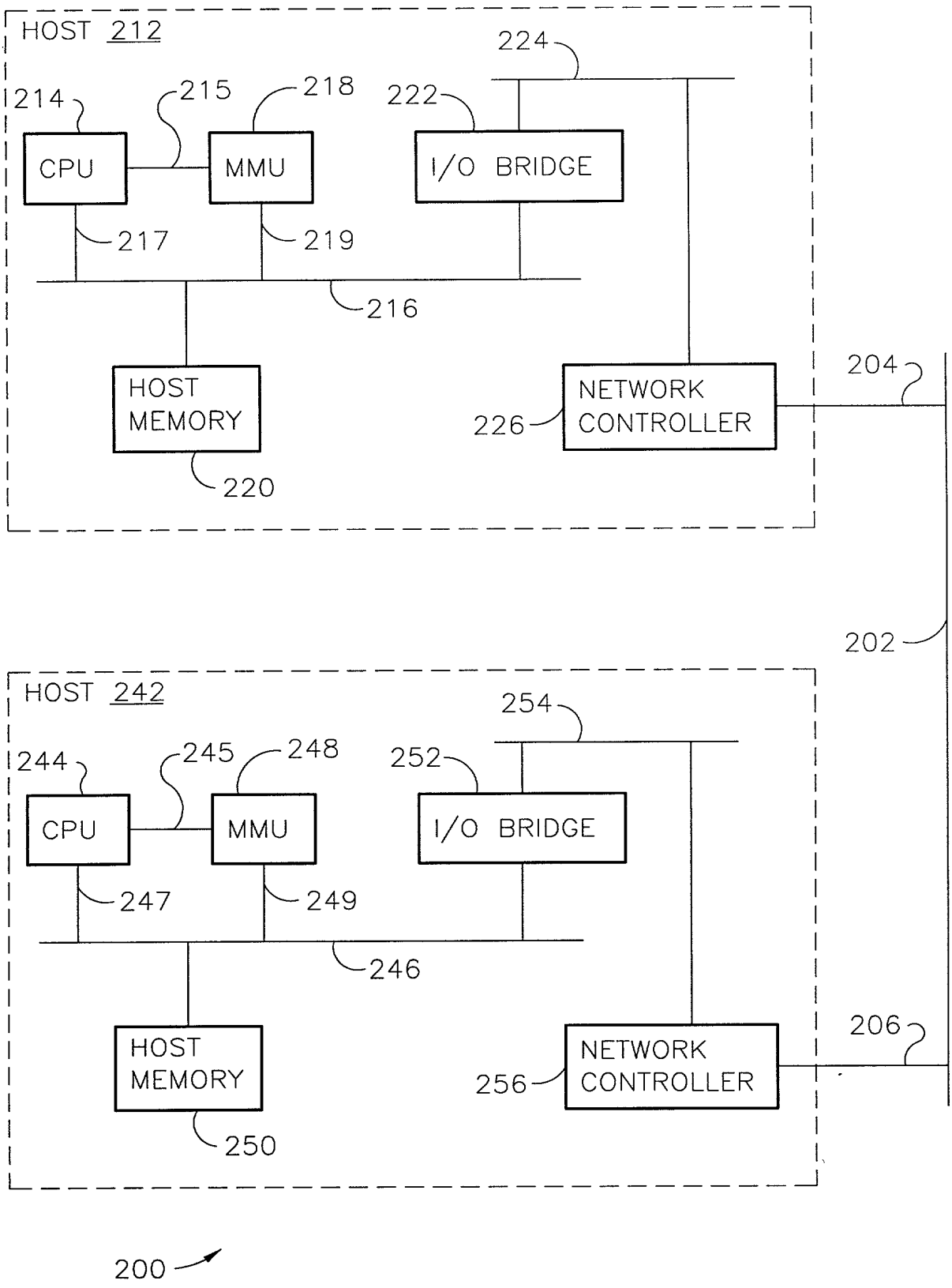

HOST 212
224
214
215
218
222
CPU
MMU
I/O BRIDGE
217
219
216
HOST MEMORY
220
NETWORK CONTROLLER
226
204
202
HOST 242
254
244
245
248
252
CPU
MMU
I/O BRIDGE
247
249
246
HOST MEMORY
250
NETWORK CONTROLLER
256
206
200

FIG. 2

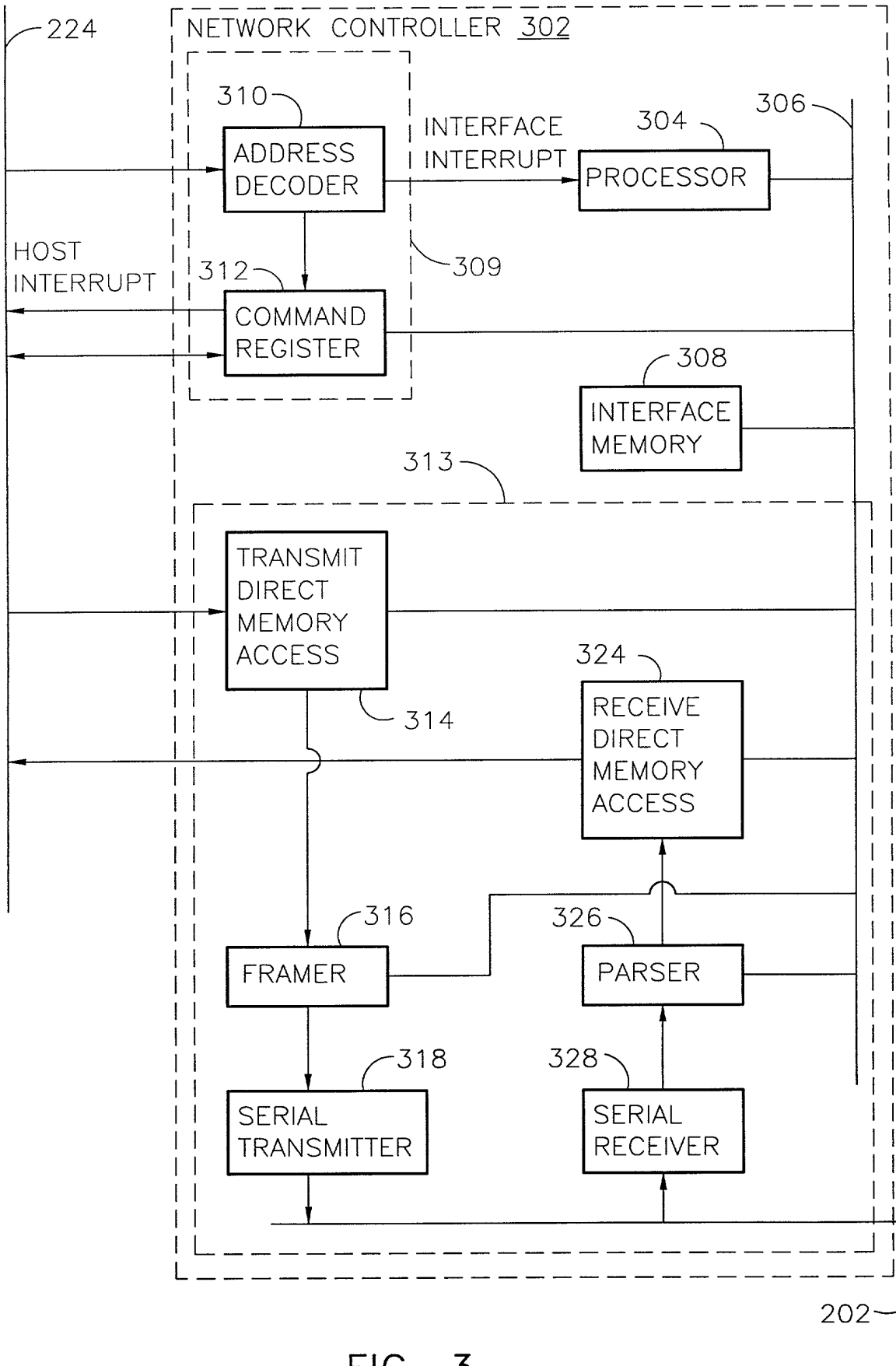

224
NETWORK CONTROLLER 302
310
ADDRESS DECODER
INTERFACE INTERRUPT
304
PROCESSOR
306
HOST INTERRUPT
312
COMMAND REGISTER
309
308
INTERFACE MEMORY
313
TRANSMIT DIRECT MEMORY ACCESS
314
324
RECEIVE DIRECT MEMORY ACCESS
316
FRAMER
326
PARSER
318
SERIAL TRANSMITTER
328
SERIAL RECEIVER
202

FIG. 3

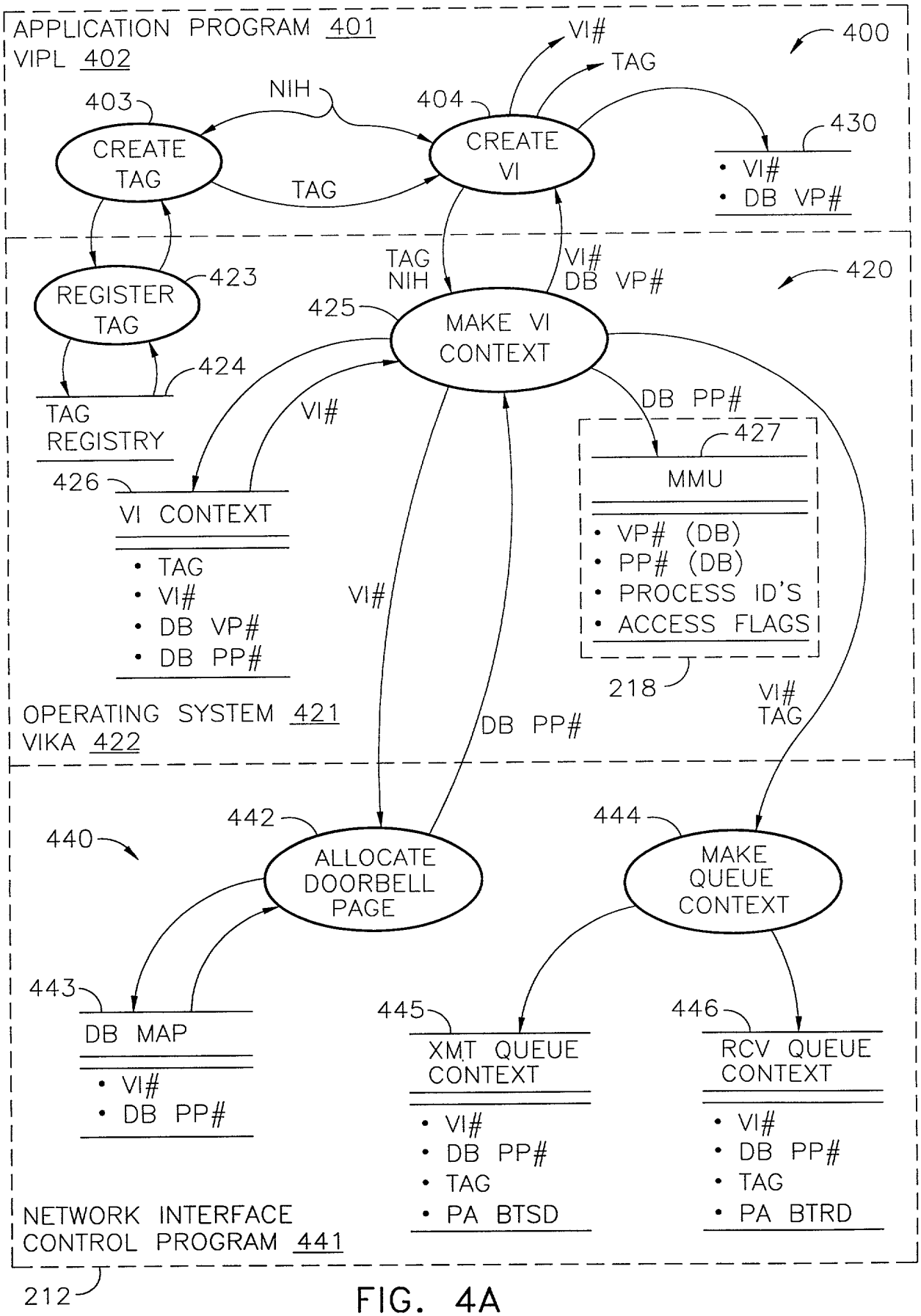



FIG. 4A

0975564v2 - 04/04/01

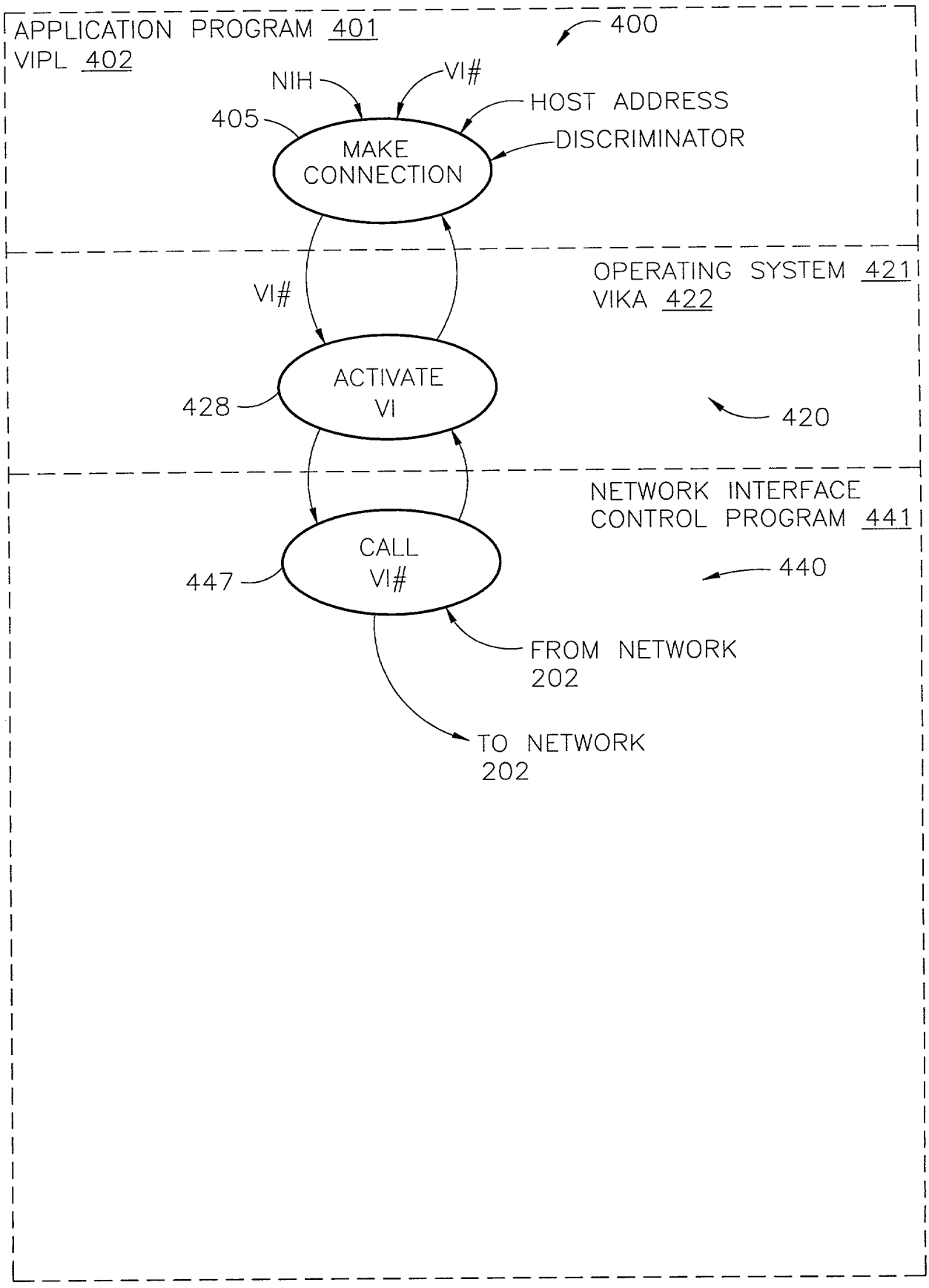

APPLICATION PROGRAM 401
VIPL 402
400
NIH
VI#
HOST ADDRESS
DISCRIMINATOR
405
MAKE CONNECTION
OPERATING SYSTEM 421
VIKA 422
VI#
ACTIVATE VI
428
420
NETWORK INTERFACE CONTROL PROGRAM 441
CALL VI#
447
440
FROM NETWORK 202
TO NETWORK 202

FIG. 4B

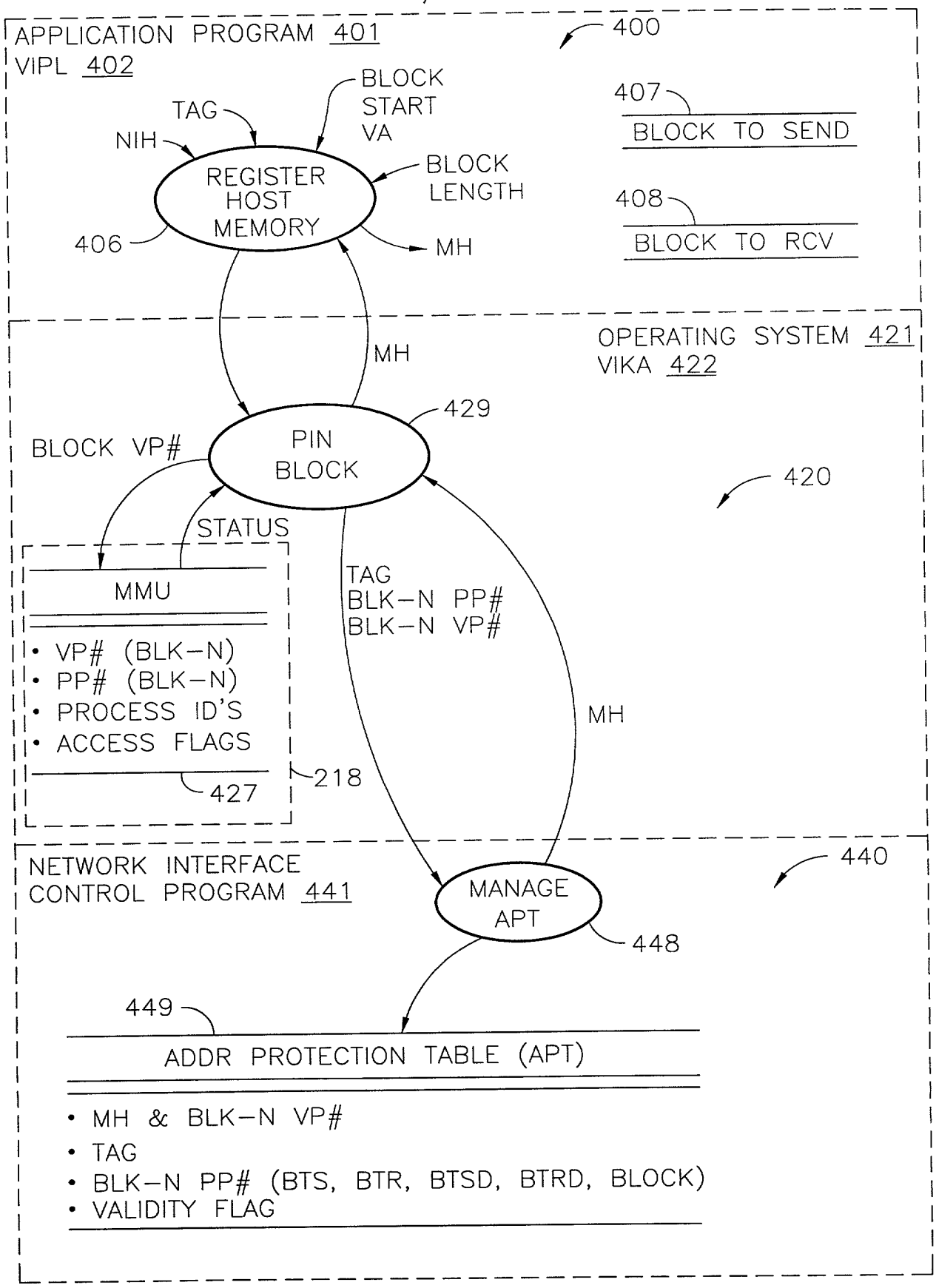



FIG. 4C

Patent Application Publication

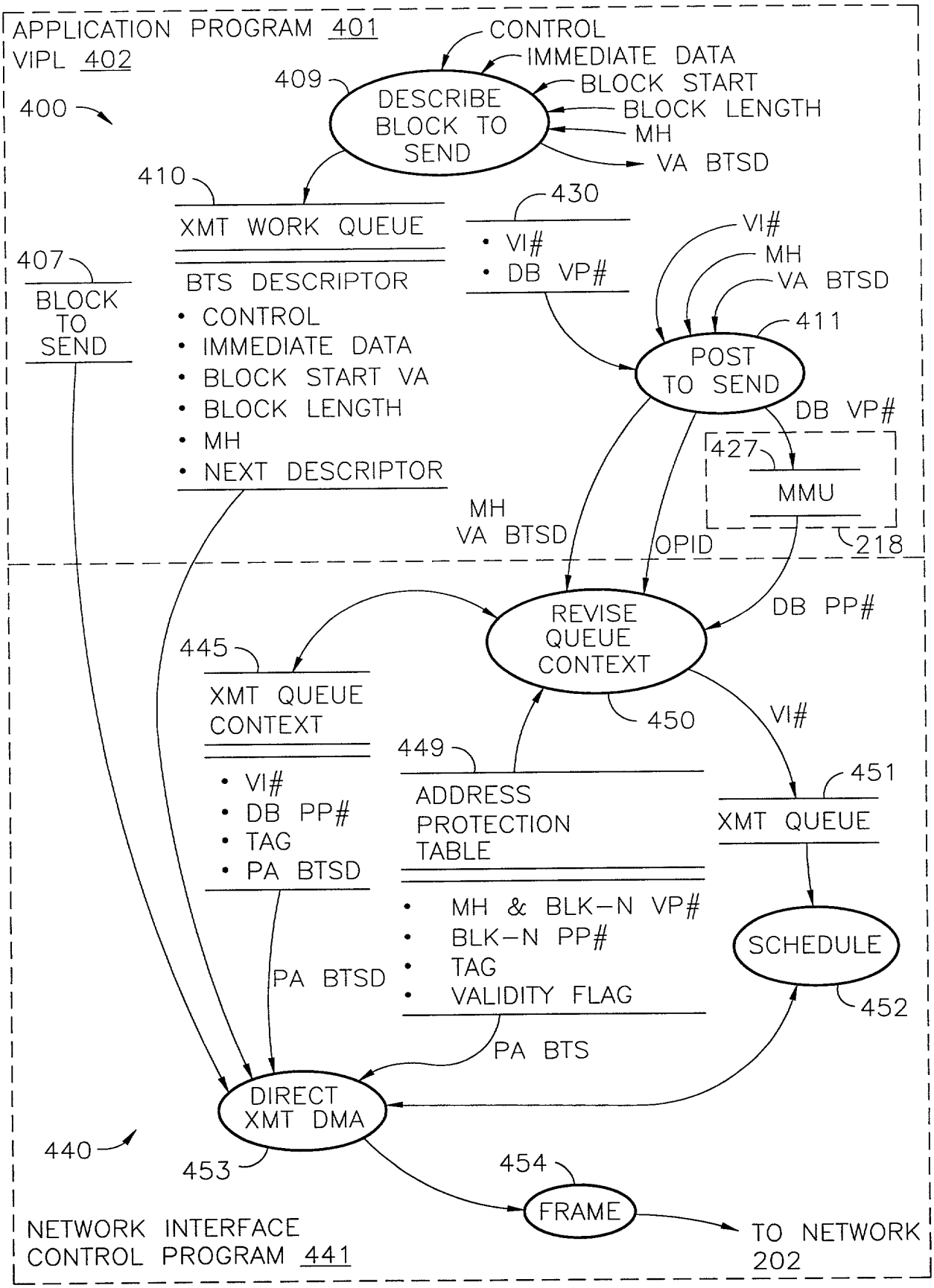

APPLICATION PROGRAM 401
VIPL 402
400
409
DESCRIBE BLOCK TO SEND
CONTROL
IMMEDIATE DATA
BLOCK START
BLOCK LENGTH
MH
VA BTSD
410
XMT WORK QUEUE
BTS DESCRIPTOR
• CONTROL
• IMMEDIATE DATA
• BLOCK START VA
• BLOCK LENGTH
• MH
• NEXT DESCRIPTOR
407
BLOCK TO SEND
430
• VI#
• DB VP#
VI#
MH
VA BTSD
411
POST TO SEND
DB VP#
427
MMU
218
MH
VA BTSD
OPID
REVISE QUEUE CONTEXT
DB PP#
445
XMT QUEUE CONTEXT
• VI#
• DB PP#
• TAG
• PA BTSD
450
VI#
449
ADDRESS PROTECTION TABLE
• MH & BLK-N VP#
• BLK-N PP#
• TAG
• VALIDITY FLAG
451
XMT QUEUE
SCHEDULE
452
PA BTSD
PA BTS
DIRECT XMT DMA
440
453
454
FRAME
TO NETWORK 202
NETWORK INTERFACE CONTROL PROGRAM 441

FIG. 4D

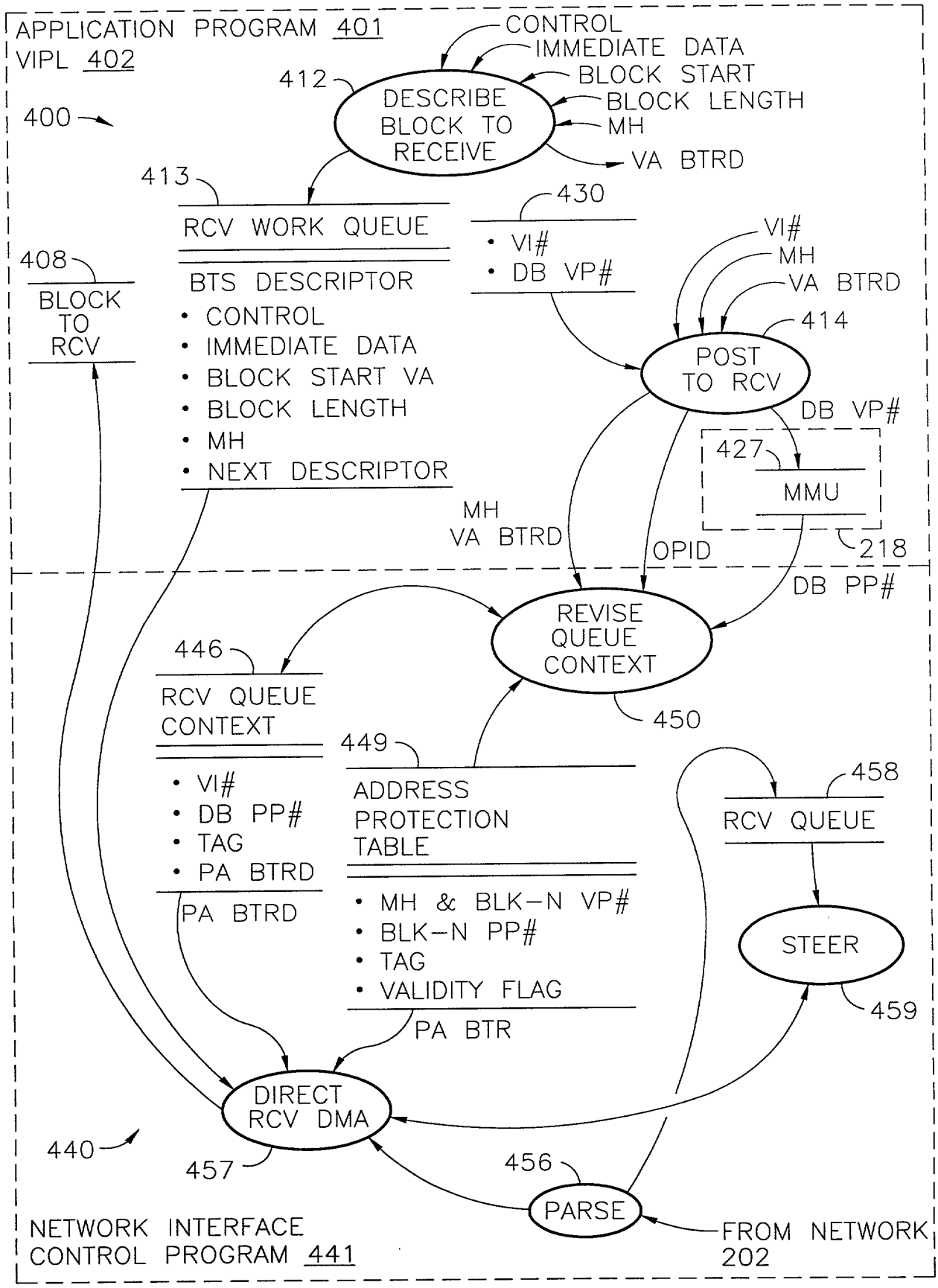
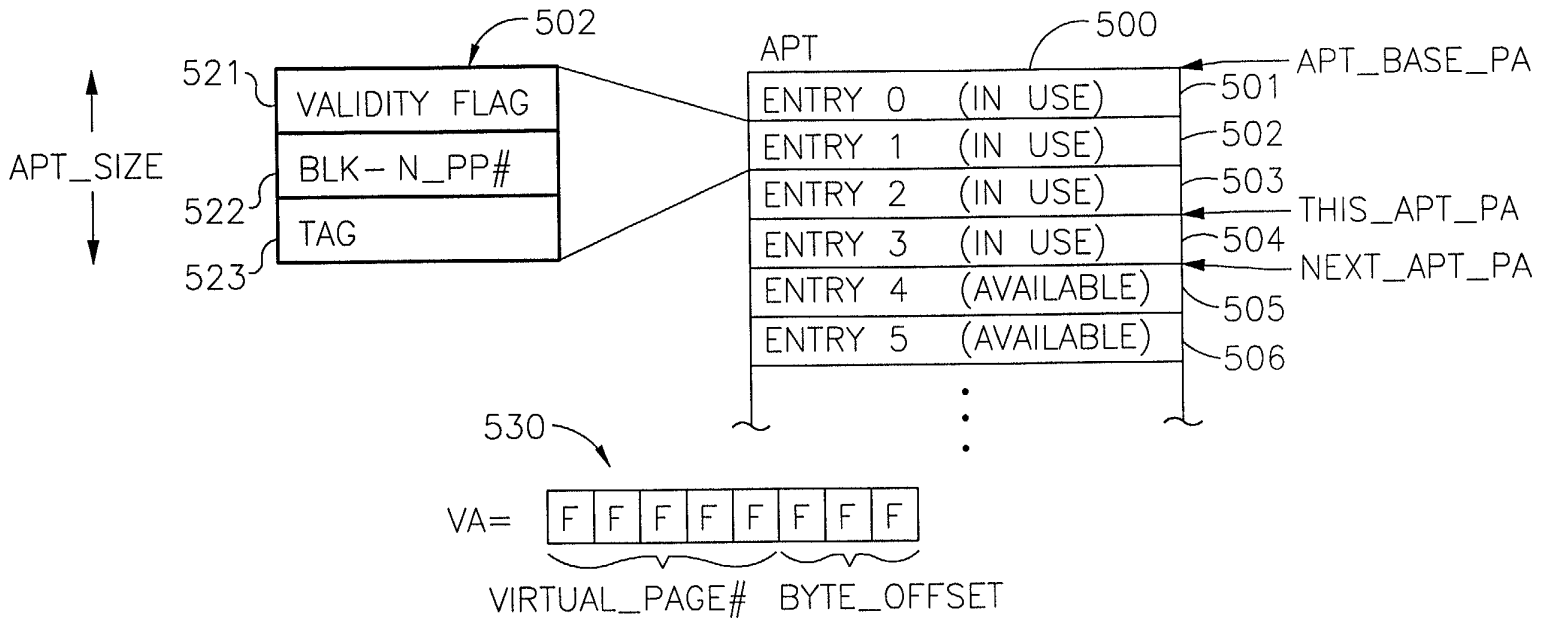

APPLICATION PROGRAM 401
VIPL 402
400
CONTROL
IMMEDIATE DATA
BLOCK START
BLOCK LENGTH
MH
VA BTRD
412
DESCRIBE BLOCK TO RECEIVE
413
RCV WORK QUEUE
BTS DESCRIPTOR
• CONTROL
• IMMEDIATE DATA
• BLOCK START VA
• BLOCK LENGTH
• MH
• NEXT DESCRIPTOR
408
BLOCK TO RCV
430
• VI#
• DB VP#
VI#
MH
VA BTRD
414
POST TO RCV
DB VP#
427
MMU
218
MH
VA BTRD
OPID
DB PP#
REVISE QUEUE CONTEXT
450
446
RCV QUEUE CONTEXT
• VI#
• DB PP#
• TAG
• PA BTRD
PA BTRD
449
ADDRESS PROTECTION TABLE
• MH & BLK-N VP#
• BLK-N PP#
• TAG
• VALIDITY FLAG
PA BTR
458
RCV QUEUE
STEER
459
DIRECT RCV DMA
440
457
456
PARSE
FROM NETWORK 202
NETWORK INTERFACE CONTROL PROGRAM 441

FIG. 4E




INITIALIZE:

540 → NEXT_APT_PA = APT_BASE_PA
THIS_APT_PA = APT_BASE_PA

WRITE:

550 → MEMORY_HANDLE = NEXT_APT_PA – VIRTUAL_PAGE#
NEXT_APT_PA = THIS_APT_PA + APT_SIZE

READ:

560 → THIS_APT_PA = VIRTUAL_PAGE# + MEMORY_HANDLE

FIG. 5